

OBSERVATIONS MADE IN 1900 ON GLACIERS IN BRITISH COLUMBIA.

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While the glaciers noted in the following report form but a small fraction of the hundreds in the Rocky Mountains of Canada, their continued recession may be taken as an indication of the changes which are taking place in the glaciers of the region. A moderate winter, followed by an early and warm spring melted the snow and flooded the rivers at an early date. The continued wet and stormy weather, which extended far into the spring and summer, did much to increase the amount of melting. So far as it has been possible to determine, all the glaciers of this region are still receding. One exception to this rule was reported, but the advance could not be proved with any certainty. ;

VICTORIA GLACIER.

The rocks marked last year to determine the motion and shrinkage of this glacier were again noted on July 24, 1900. The large block of limestone about one mile from the tongue marked "VX '99" appeared to have moved 147 feet, while a large block of sandstone near the terminal moraine had an apparent motion of 115 feet. The general condition of the glacier appears practically the same as last year. Measurements taken on the northwest side indicate a shrinkage of about six feet for the year. Several very fine glacier tables were noted, one being a block of sandstone eighteen inches thick, from ten to twelve feet in diameter, and elevated not less than five feet from the surface of the surrounding ice.

ASULKAN GLACIER.

This glacier has receded perceptibly since last year, the tongue being twenty-four feet further up the valley than when last noted. There has also been a marked shrinkage in every dimension.

ILLECILLEWAET GLACIER.

The very small recession in the tongue of the Illecillewaet Glacier during the summer of 1899 was found to have been largely made up in 1900, so that the average of the two years was not far from that of the past thirteen, as previously noted.¹ A distinct shrinkage was observed in all dimensions, but this was most noticeable at the tongue which was now 140 feet above the rock "C," nearly twice the distance of the previous year.

Our work the past summer consisted: (*a*) in taking the test picture of the lower part of the glacier, which was made under unfavorable conditions on August 7, 1900; (*b*) location of the border of the ice on the map of 1899, and (*c*) location and measurement of motion of line of plates across the glacier.

a. Of the test picture nothing need be added except that the series is now complete for three consecutive years and furnishes a most interesting illustration of the comparatively slight and yet none the less constant changes in the contour of the ice.

b. The position of the edge of the ice was easily located with reference to the several fixed rocks laid out on the general survey of 1899. The plotting of this border line showed that the glacier had receded an average of not far from twenty feet on the sides and sixty-four feet on the extreme tongue. At one point the ice seemed to have changed but little since last year, while at others the recession was more than 100 feet. This constant yearly recession has been proved to be in progress at least since 1887.

c. The location and measurement of the line of eight plates across the glacier, which were first laid out on July 31, 1899, and had consequently been on the ice almost exactly one year, was taken up on the 6th of August, 1900, on which date plates Nos. 1, 2, 3, 4, 5, 6 and 7 were located. Plate No. 8 could not be found, and it was not discovered till several days later, when its position also was obtained.

All the plates seem to have moved in lines almost parallel with the centre line of the glacier. The following table shows the motion of the plates for the year, and also repeats for comparison the motions determined in the fall of 1899, after the plates had been on the ice but thirty-six days. It will be noted that the con-

¹ *Proceedings of the Academy of Natural Sciences of Philadelphia*, 1899, p. 124.

cave or northeast side has a greater daily motion than last year, while the convex or southwest has not moved at quite so rapid a rate. Whether this change is accidental or is the result of peculiar conditions has not been determined.

While the plates were left on the surface of the glacier, it is hardly likely that future measurements will be of great value, should the plates be again found. They are approaching a much rougher portion of the glacier, broken by crevasses, deep wells and seracs, and even should they remain on the surface, in many instances it will be impossible to see them from the base line. They have, however, served their purpose in demonstrating that the average motion of nearly two feet per day as determined by Dr. W. S. Green in 1888 was either much greater than the actual motion, or was the result of conditions which do not now exist.

Table showing Total Average Daily Motion of Line of Plates on Mccilleuet Glacier, Glacier House, B. C.

Number of Plate.	Total Motion from July 31, 1899, to August 6, 1900—372 days (inches).	Average Daily Motion from July 31, 1899, to August 6, 1900—372 days (inches).	Average Daily Motion from July 31, 1899, to September 5, 1899—36 days (inches).
1	1063	2.86	2.56
2	1488	4.	3.90
3	1677	4.51	5.51
4	2172	5.84	6.77
5	2256	6.07	6.06
6	2364	6.36	6.79
7	1902	5.11	6.16
8	2040	5.48	6.